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## WHAT IS CLAIMED IS:

- 1. A bi-directional communications system integrated with a remote web-based expert data center wherein a medical programmer for an IMD is uplinked to the web-based expert data center via the bi-directional communications system, the web-based expert data center in configuration with the programmer forming a secure medical information exchange network wherein patient records are transferred, the medical information exchange network comprising:
  - a database residing within the programmer for storing sensitive information;
  - a key source in data communications with the programmer and the web-based expert data center for transmitting an encryption key to the programmer and a decryption key to the expert-data center;
  - an encryption engine residing within the programmer for encrypting the sensitive information using the encryption key; an interface for coupling the programmer to the expert data center; and a decryption engine residing within the expert data center for

decrypting the encrypted sensitive information using the decryption key.

- 2. The system of claim 1, wherein the programmer device is in telemetric communication with the implantable medical device.
- 3. The system of claim 2, wherein the sensitive information stored within the database includes data obtained from the implantable medical device.
- 4. The system of claim 1, wherein the sensitive information stored within the database includes confidential patient information.

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- 5. The system of claim 1, wherein the interface is a telephone line connection.
- 6. The system of claim 1, wherein the interface is an intranet connection.
  - 7. The system of claim 1, wherein the interface is an internet connection.
  - 8. The system of claim 1, wherein the interface is a satellite connection.
  - 9. The system of claim 1, wherein the interface is a global positioning system connection.
  - 10. The system of claim 1, wherein the interface comprises at least two communication links selected from the group of communication links consisting of a telephone line communication, an intranet communication, an internet communication, a satellite communication, and a global positioning system communication.
  - 11. The system of claim 1, wherein the encryption key and the decryption key are symmetric keys.
  - 12. The system of claim 1, wherein the encryption key and the decryption key are asymmetric keys.
  - 13. The system of claim 1, wherein the encrypted sensitive information includes a digital signature.
  - 14. The system of claim 1, wherein the remote expert data center is a second medical device.

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- 15. A bi-directional communications system integrated with a remote web-based expert data center wherein a medical programmer for an IMD is uplinked to the web-based expert data center via the bi-directional communications system, the web-based expert data center in configuration with the programmer forming a secure medical information exchange network wherein patient records are transferred, the medical information exchange network comprising a system for transferring information from a to a programmer, the system comprising:
  - a database residing within the remote expert data center for storing sensitive information;
  - a key source in data communications with the programmer and the remote expert data center for distributing an encryption key to the remote expert data center and a decryption key to the programmer;
  - an encryption engine residing within the remote expert data center for encrypting the sensitive information using the encryption key;
  - an interface for coupling the remote expert data center to the programmer; and
  - a decryption engine residing within the programmer for decrypting the encrypted sensitive information using the decryption key.
- 16. The system of claim 15, wherein the programmer is in telemetric communications with an implantable medical device in a patient.
- 17. The system of claim 16, wherein the sensitive information stored within the database includes data obtained from the implantable medical device.
- 18. The system of claim 15, wherein the sensitive information stored within the database includes confidential patient information.

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- 19. The system of claim 15, wherein the interface is a telephone line connection.
- 20. The system of claim 15, wherein the interface is an intranet connection.
- 21. The system of claim 15, wherein the interface is an internet connection.
- 22. The system of claim 15, wherein the interface is a satellite connection.
- 23. The system of claim 15, wherein the interface is a global positioning system connection.
- 24. The system of claim 15, wherein the interface consists at least one communication link selected from the group of communication links consisting of a telephone line communication, an intranet communication, an internet communication, a satellite communication, and a global positioning system communication.
- 25. The system of claim 15, wherein the encryption key and the decryption key are symmetric keys.
- 26. The system of claim 15, wherein the encryption key and the decryption key are asymmetric keys.
  - 27. The system of claim 15, wherein the encrypted sensitive information includes a digital signature.

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- 28. A system for transferring information between a programmer and a remote expert data center, the system comprising:
  - a key source in data communications with the programmer and the remote expert data center for distributing a set of encryption keys to the programmer and the remote expert data center;
  - an interface for coupling the programmer to the remote expert data center;
  - a first encryption engine residing within the programmer for encrypting a first set of sensitive information residing in the programmer using one of the set of encryption keys generated by the key source;
  - a second encryption engine residing within the remote expert data center for encrypting a second set of sensitive information residing in the remote expert data center using one of the set of encryption keys generated by the key source;
  - a first decryption engine residing within the programmer for decrypting the second set of sensitive information generated by the second encryption engine; and
  - a second decryption engine residing within the remote expert data center for decrypting the first set of sensitive information generated by the first encryption engine.
- 29. The system of claim 28, wherein the programmer is in electrical communication with an implantable medical device in a patient.
- 30. The system of claim 29, wherein the first set of sensitive information includes data obtained from the implantable medical device.
- 31. The system of claim 28, wherein the first set of sensitive information includes confidential patient information.

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- 32. The system of claim 28, wherein the interface is a telephone line connection.
- 33. The system of claim 28, wherein the interface is an intranet connection.
  - 34. The system of claim 28, wherein the interface is an internet connection.
  - 35. The system of claim 28, wherein the interface is a satellite connection.
  - 36. The system of claim 28, wherein the interface is a global positioning system connection.
  - 37. The system of claim 28, wherein the interface comprises at least one communication link selected from the group of communication links consisting of a telephone line communication, an intranet communication, an internet communication, a satellite communication, and a global positioning system communication.
  - 38. The system of claim 28, wherein the set of encryption keys are symmetric keys.
- 39. The system of claim 28, wherein the set of encryption keys are asymmetric keys.
  - 40. The system of claim 28, wherein the first set of sensitive information includes a digital signature.

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- 41. The system of claim 28, wherein the second set of sensitive information includes a digital signature.
- 42. A system for securely transferring sensitive information received from at least one lead positioned within a passageway of a heart related to an implantable medical device to a remote expert data center, the system comprising:
  - a programmer in data communication with the implantable medical device for receiving and processing the sensitive information from the implantable medical device;
  - a key source in data communication with the programmer and the remote expert data center for distributing an encryption key to the programmer and a decryption key to the remote expert data center;
  - an encryption engine residing within the programmer for encrypting the sensitive information using the encryption key;
  - an interface for coupling the programmer to a remote expert data center; and
  - a decryption engine residing within the remote expert data center for decrypting the encrypted sensitive information using the decryption key.
- 43. The system of claim 42, wherein the interface is a telephone line connection.
- 44. The system of claim 42, wherein the interface is an intranet connection.
- 45. The system of claim 42, wherein the interface is an internet connection.

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- 46. The system of claim 42, wherein the interface is a satellite connection.
- 47. The system of claim 42, wherein the interface is a global positioning system connection.
- 48. The system of claim 42, wherein the interface consists of at least one communication link selected from the group of communication links consisting of a telephone line communication, an intranet communication, an internet communication, a satellite communication, and a global positioning system communication.
- 49. The system of claim 42, wherein the encryption key and the decryption key are symmetric keys.
- 50. The system of claim 42, wherein the encryption key and the decryption key are asymmetric keys.
- 51. The system of claim 42, wherein the encrypted sensitive information includes a digital signature.
- 52. A method of securely transferring sensitive information from a programmer to a remote expert data center, the method comprising: generating an encryption key for distribution to the programmer; generating a decryption key for distribution to the remote expert data center;
  - encrypting the sensitive information residing on the programmer with the encryption key;
  - transferring the encrypted sensitive information from the programmer to the remote expert data center; and

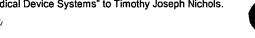
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decrypting the encrypted sensitive information residing on the remote expert data center with the decryption key.

- 53. The method of claim 52, wherein the programmer is connected to an implantable medical device in a patient.
- 54. The method of claim 52, wherein the step of encrypting the sensitive information residing on the programmer further comprises: creating a digital signature for the encrypted sensitive information.
- 55. The method of claim 54, wherein the step of decrypting the encrypted sensitive information residing on the remote expert data center further comprises:

verifying the digital signature associated with the encrypted sensitive information.

- 56. A method of securely transferring sensitive information from a remote expert data center to a programmer, the method comprising:
  - generating an encryption key for distribution to the remote expert data center;
  - generating a decryption key for distribution to the programmer;
  - encrypting the sensitive information residing on the remote expert data center with the encryption key;
  - transferring the encrypted sensitive information from the remote expert data center to the programmer; and
  - decrypting the encrypted sensitive information residing on the programmer with the decryption key.
- 57. The method of claim 56, wherein the programmer is connected to an implantable medical device in a patient.

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- 58. The method of claim 56, wherein the step of encrypting the sensitive information residing on the remote expert data center further comprises: creating a digital signature for the encrypted sensitive information.
- 59. The method of claim 58, wherein the step of decrypting the encrypted sensitive information residing on the programmer further comprises:

verifying the digital signature associated with the encrypted sensitive information.

- 60. A system for transferring information from a programmer to a remote expert data center, the system comprising:
  - means for generating an encryption key for distribution to the programmer;
  - means for generating a decryption key for distribution to the remote expert data center;
  - means for encrypting the sensitive information residing on the programmer with the encryption key;
  - means for transferring the encrypted sensitive information from the programmer to the remote expert data center; and
  - means for decrypting the encrypting sensitive information residing on the remote expert data center with the decryption key.
- 61. The method of claim 60, wherein the programmer is connected to an implantable medical device in a patient.
- 62. The system of claim 60, wherein the means for encrypting the sensitive information residing on the programmer further comprises:

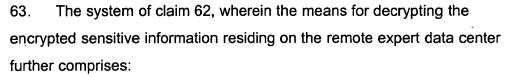
means for creating a digital signature for the encrypted sensitive information.

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means for verifying the digital signature associated with the encrypted sensitive information.

- 64. A system for transferring sensitive information from a remote expert data center to a programmer, the system comprising:
  - means for generating an encryption key for distribution to the remote expert data center;
  - means for generating a decryption key for distribution to the programmer;
  - means for encrypting the sensitive information residing on the remote expert data center with the encryption key;
  - means for transferring the encrypted sensitive information from the remote expert data center to the programmer; and
  - means for decrypting the encrypting sensitive information residing on the programmer with the decryption key.
- 65. The system of claim 64, wherein the programmer is connected to an implantable medical device in a patient.
- 66. The system of claim 64, wherein the means for encrypting the sensitive information residing on the remote expert data center further comprises:

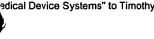
  means for creating a digital signature for the encrypted sensitive information.

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67. The system of claim 66, wherein the means for decrypting the encrypted sensitive information residing on the programmer further comprises:

means for verifying the digital signature associated with the encrypted sensitive information.

68. A remote expert data center readable medium containing instructions for controlling a remote expert data center system to perform a method for securely transferring sensitive information from a programmer to a remote expert data center, the method comprising:

generating an encryption key for distribution to the programmer; generating a decryption key for distribution to the remote expert data center;

encrypting the sensitive information residing on the programmer with the encryption key;

transferring the encrypted sensitive information from the programmer to the remote expert data center; and

decrypting the encrypted sensitive information residing on the remote expert data center with the decryption key.

69. A remote expert data center readable medium containing instructions for controlling a remote expert data center system to perform a method for securely transferring sensitive information from a remote expert data center to a programmer, the method comprising:

generating an encryption key for distribution to the remote expert data center;

generating a decryption key for distribution to the programmer; encrypting the sensitive information residing on the remote expert data center with the encryption key;

transferring the encrypted sensitive information from the remote expert data center to the programmer; and decrypting the encrypted sensitive information residing on the programmer with the decryption key.